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ABSTRACT

In the particular intervention program described, children under 3 years of age are given a nursery school type of experience five days a week for eight or more hours a day, with program emphasis on stimulating retarded development. Mothers are given inservice training averaging 3 hours per week, stressing development of mothers' self-concept, general handling of the child, language development of the child, physical care, and development of child's gross and fine motor control. A minimum of 10 weeks of paid participation as a teacher aide is available for each of the mothers. Data are reported for an 11-month period on 18 families from two centers that primarily serve Chicano migrant families. Children were pre- and posttested on measures to determine motor, language, and social development and, in addition, a test was given to assess the stimulation potential of each child's home. Conclusions must be tentaive in the absence of a control group, but posttest scores indicated a significant improvement in the amount and quality of developmental home stimulation. Subtest scores showed the greatest improvement in the areas of language development and developmental and vocal stimulation. (NH)

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EVALUATION OF A PARENT AND CHILD CENTER PROGRAM

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The present report describes changes that have occurred in children and parents participating in a pre-school intervention program.

A pilot-project of over 30 "parent and child centers" was introduced by the Federal Office of Economic Opportunity (OEO) September, 1967. The centers were intended to provide comprehensive services to disadvantaged families with one or more children under three years of age. Specifically, the services to be included were (1) comprehensive health care; (2) activities for the children designed to stimulate physical, intellectual and emotional development; (3) parent activities to facilitate understanding of child development, family management, employability, self-confidence, and family relationships; (4) social service to the entire family; and (5) a program to increase the family's knowledge of and participation in the neighborhood and community. The primary emphasis is on counteracting the usual detrimental effects of the poverty situation on the child under three years of age.

It was anticipated that each center would be uniquely adapted to its area, and this was true of the Grandview-Crewport Parent and Child Centers in this report. These two centers served a population of primarily migrant-labor families spread over a primarily rural area of fruit and vegetable farms in central Washington. This contrasts with the more typical urban setting for a parent and child center in a black ghetto neighborhood.

When the overall program was introduced, OEO stipulated that each center should be affiliated with a university or similar institution, in part so that

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a component of evaluation would be built into the program. In addition, a national evaluation was conducted by an independent research firm, Kirschner Associates. The national evaluation was to deal in large part with descriptive data, and the local evaluation was "to provide an in-depth supplement." The present evaluation focuses primarily on the effect of the centers on the intellectual, verbal, behavioral, and personality-social development of the children. A second focus was on the effect of the centers on aspects of parent behavior related to the above factors in the child's development. A third focus was on the effect of the centers on the parent's knowledge of resources available to them in the community. The scope of this evaluation was obviously limited to a few central concerns and does not deal with many of the other functions of the centers such as health care, vocational training, recreation, etc. This limitation reflects the funds and facilities available for the evaluation.

Description of the centers' operation will also be limited here to describing aspects most relevant to the local evaluation. Both the Grandview and Grewport centers are located in church buildings. Grandview is a town of about 3,500 people while Crewport is a migrant labor camp in partial operation. The Grandview center began operating with a handful of children in January, 1969. The Crewport center opened about two months later.

The total number of families to be served at any one time by the two centers combined was fifty. However, the centers gained families slowly and began to near the maximum enrollment only near the end of the first year of operation. The small group of families that began participating in the Grandview center at the beginning tended to be more established in the area than true migrants. However, many were still partially dependent on agricultural work for their income. This group of families may well be different from other migrant laborers in another respect. A few of these parents had attended planning meetings for the

center in advance of its opening. The others had chosen to involve their family in the center even though it apparently did not have great appeal for the majority of migrant-labor families in the area. Thus, the center families may have different patterns of motivation than those who chose not to be involved.

There were two aspects of the center which were of greatest relevance in facilitating the development of the child. The most direct influence on the child was the nursery school type of experience provided for him at the centers. For the time span involved in the present report, the child's participation was generally five days a week, eight or more hours a day. The centers aimed at providing an experience with more emphasis on stimulating retarded development than is typical of nursery schools. There were limitations on accomplishing this goal, chief among them being that only one trained teacher was available at each center for most of the period covered here. The head teacher at one center had completed college in Holland. The other head teacher had graduated from a normal school in the 1930's and had had some varied teaching experiences and some Montessori training since then. Frequent verbal interaction with adults and provision for educational experiences with play materials were two goals of the program that contrast with the usual, unstimulating early childhood of these children.

A second aspect of the centers aimed at indirect influence on the child. A minimum of ten weeks of paid participation as a teacher's aide was available for each of the mothers. This was chosen as the most promising method of parent education. Inservice training averaging around three hours per week was arranged for the aides. According to the head teacher at Grandview, the training stressed:

1. Development of the self-concept of the aides.
2. General handling of the child.
3. Language development of the child (Spanish and English were used in the center as many of the families are bilingual or Spanish speaking).

4. Physical care (medical and dental care as well as two meals and two snacks per day were provided).

5. Development of gross motor control (use of balance boards, steps, tricycle riding, etc.).

6. Fine motor development (use of puzzles, painting, dressing frames with snaps and zippers, etc.).

The average mother spent eight months participating at the center during the eleven month period covered by the present evaluation.

Many other aspects of the centers were of indirect benefit to the child, such as the provision of medical care for the family, the coordination of non-center services such as occupational training for the parents, providing a focal point for the families' attachment to the community, etc.

The main evaluation effort aimed at assessing the effect of this many-faceted program in two areas of central importance, the child's development and the environment provided for the child at home. An additional aim was that of assessing the parents' knowledge of services and facilities available to them in the community.

METHOD

Procedure

The original plan was to compare 35 families who were center participants with 35 families who were not. The two groups of families were to be equated on the sex and age distribution of the children, family size, and income and occupation of the parents. Both groups were to be pretested at the start of the program. Posttesting was to be three, six and eleven months later for twenty families in each group who were now steady residents of the area, and at approximately three and/or six month intervals for fifteen truly migrant families in each group. However, even this rather modest plan was not feasible. There were two major problems. The first was that the centers were slow to attract families

and almost halfway through the year, the centers had reached only about half of their 50 family capacity. The second problem was that the centers failed to cooperate in any way with efforts to obtain families for a control group.

We did obtain a small control group through testing families who had school children in a nearby town. However, the performance of the children in those families was so clearly superior to that of the center children that it was evident they were not at all comparable families. Thus, the data from those families will not be considered further.

As a result of these problems, this report will deal only with the testing of the center families that were available. Pretesting was initiated on 33 families; 18 were available for a three-month follow-up; and a six-month follow-up was completed on 12.

Subjects

The 18 families that could be tested completely at least two time will be described. The fathers were farm laborers except in two cases in which they were janitors. All of the mothers except for two worked at the center, usually as aides, for part of the eleven month evaluation period (M = 8 months). Of the other two, one was a housewife and one was a laborer. The fathers averaged 30 years of age and the mothers 26. The fathers averaged 6.6 years of education, and the mothers 6.5. The ethnicity of the families was Chicano in 11 cases, mixed Chicano and Anglo-American in three, black in two, Anglo American in one, and Oriental-Guamanian in one. Two of the fathers were missing because of divorces. The age of the target child, the child between birth and three years of age, averaged 1.6 years.

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Measures

A. The Denver Developmental Screening Test (DDST) was developed by Frankenburg and Dodds (1967). It was designed as a device for screening

infants and pre-school children for evidence of slow development. The measure is divided into four subtests: gross motor, fine motor, language and personal-social. The items can be administered and scored by persons without training in psychological testing. The authors standardized the instrument on a sample of 1,036 children under six years of age. They report high reliability of the instrument over a one week period (95.87% agreement) and a close relationship between results from the DDST and those from the Yale Developmental Schedule (r = .97).

This measure was uniquely suited for this evaluation since it could be administered to children at various ages below three by a person without specialized training. The score utilized for our purposes is the percentage of items passed, out of the total number of items on which the child was tested. The number and exact nature of items on which a child is tested varies with age. The test was administered in private rooms at the centers.

B. The Home Stimulation Inventory (STIM) was developed by Caldwell, Heider and Kaplan. It is intended for "assessing the stimulation potential of the home" (Caldwell, 1967). The test is administered in the home while the child is awake. It is designed for use with children under three. The following subscales are included: frequency and stability of adult contact, developmental and vocal stimulation, emotional climate, avoidance of restriction, breadth of experience, aspects of the physical environment, and available play materials. The test is composed of structured items, but these are answered by the examiner on the basis of his interview with the mother and his observations during the interview.

The scores on the test have been found to discriminate between lower-class and middle-class families. Presumably, of course, this discrimination reflects the differences in the homes and parental behavior that account for the developmental handicap which lower-class children develop during the first few years. STIM scores have also been found to be correlated (rho = .87) with the child's scores on the Cattell Infant Intelligence Scale.

C. An instrument developed by Katz, Peters and Stein for observing children's behavior in kindergarten and pre-school classes was also utilized. It involves direct observation of the child's "classroom" behavior. The subscales are task orientation, satisfaction, motivation, cognition, motility, interpersonal behavior and situation. Unfortunately, examination of the results indicated that the examiner had not been successful in obtaining valid observations with the young, center children, so that those results can not be included.

D. A brief questionnaire concerning the parents' knowledge of community resources was included. The mother was asked to, "Name all the agencies that you know of which could help you if: (a) you wanted to get more education; (b) you needed to get a job; (c) you needed to get medical or dental treatment for yourself or someone in the family; or (d) things had gone badly and you did not have enough food or clothing."

The Examiner

Initial efforts to find a bilingual person with formal training in psychological testing who could devote half-time to this project were unsuccessful. It was possible to hire Mrs. Gloria La Framboise, a bilingual college graduate with extensive experience with migrant families and organizations. Mrs. La Framboise had gained some experience with tests in the language development program of a nearby school district. She administered the DDST, STIM and questionnaire, utilizing either English or Spanish depending on which language the child or parent seemed most familiar with.

RESULTS

As can be seen from Figure 1, at their initial testing the PCC children successfully performed only 58% of the tasks that average children of their age perform on the DDST. This improved to 71% after three months involvement in the PCC, and that improvement is statistically reliable (Wilcoxon sign-rank test of differences $T = 15$, $p < .01$). The further improvement to 78% success at six months into the program is, of course, a statistically reliable improvement over the pretest ($T = 6.5$, $p < .01$), but not over the three month posttest. As could be expected the greatest gain appears to occur during the first three months of contact with the program, with a diminished gain during the second three months. In the absence of an adequate control group it is not possible to determine if some part of this gain is attributable to regression toward the mean. That is, some of the "gain" may be due to the children being at a low point at the time their families sought the assistance the centers could provide and a more representative performance may have occurred at retesting. Obviously, it would be hard to separate the influence of the centers from improvement in the situation of the family.

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Insert Figure 1 about here

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The results on the STIM (Figure 2) essentially parallel those of the DDST. The home setting and parental treatment of the child improved from about half (M = 33) of the maximum score (63) to two-thirds of the maximum score (M = 42) after three months of family involvement in the centers. This improvement is statistically reliable ($T = 22$, $p < .05$). As with the DDST, the results at six months (M = 48) are a statistically reliable improvement over the pretest scores ($T = 0$, $p < .01$), but the smaller gain between three and six months is not.

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Insert Figure 2 about here

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With both the DDST and the STIM it would be possible to analyze the changes in subtest scores over the three tests. In view of the small sample size and the absence of a control group for comparison purposes statistical analysis does not seem merited. However, the subtest scores are presented in the appendix as they may suggest tentative conclusions about more specific effects of the program.

In Figure 3 it can be seen that the mother's knowledge of community agencies able to assist the family improved during the first three months of involvement in the PCC. Again this initial effect is statistically reliable. In practical terms the effect is quite small, averaging a gain in knowledge of about one agency. This knowledge showed a slight drop by the time of the six month retest. A typical set of agencies named would be "welfare," "employment office," and "PCC." Only three mothers ever named more than three agencies.

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Insert Figure 3 about here

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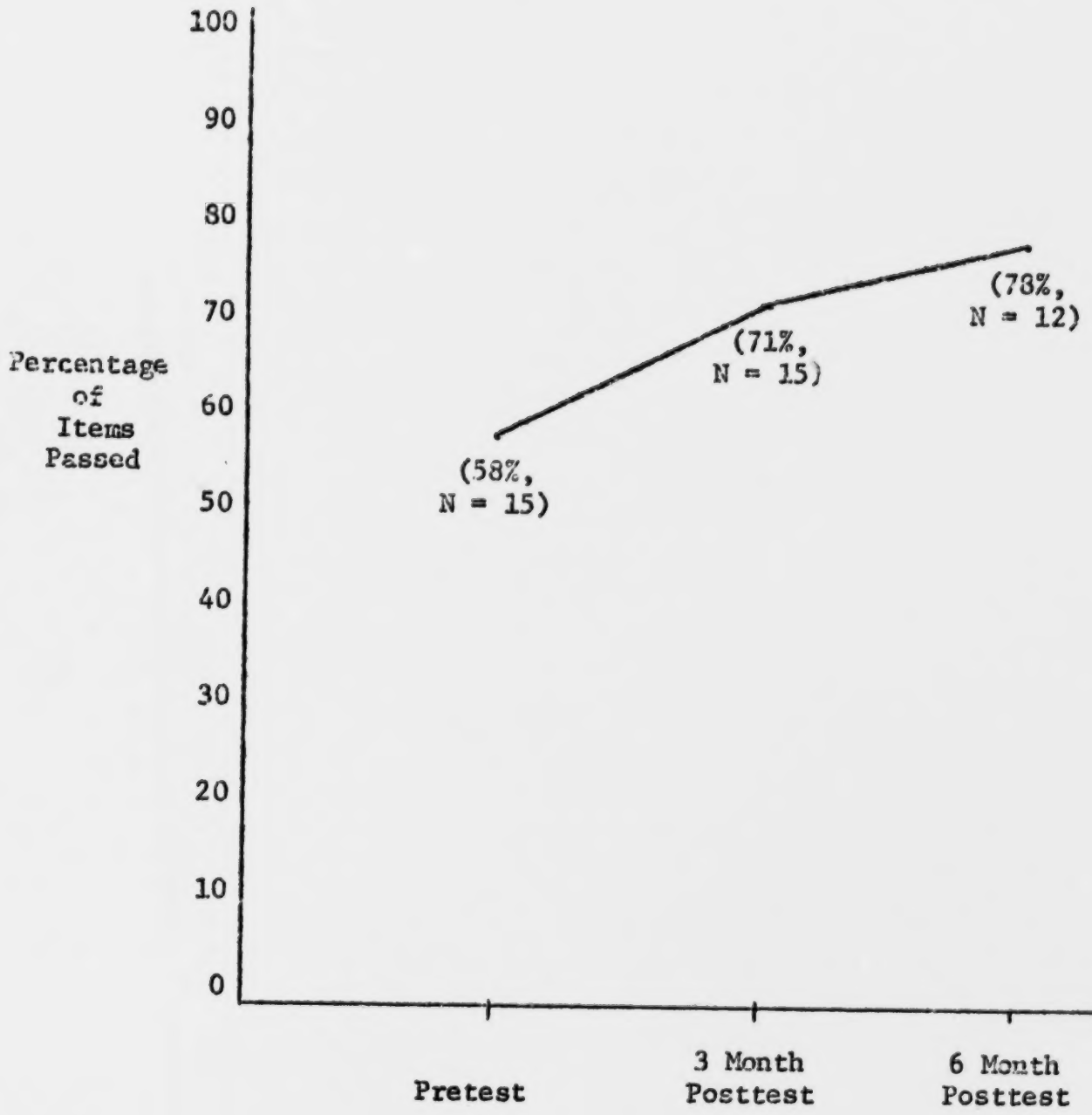

FIGURE 1

CHILDREN'S PERFORMANCE ON THE DENVER DEVELOPMENTAL SCREENING TEST

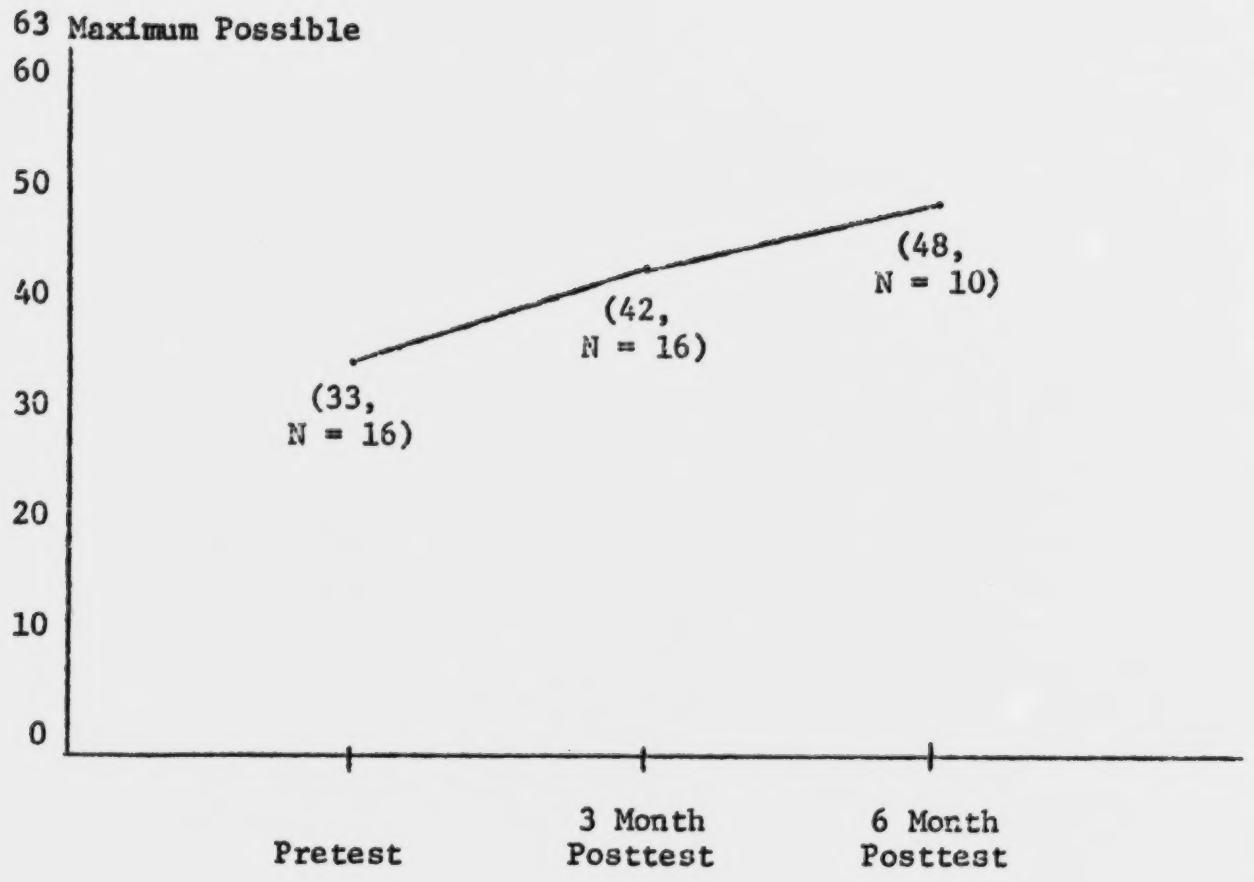

FIGURE 2

SCORES ON THE HOME STIMULATION INVENTORY

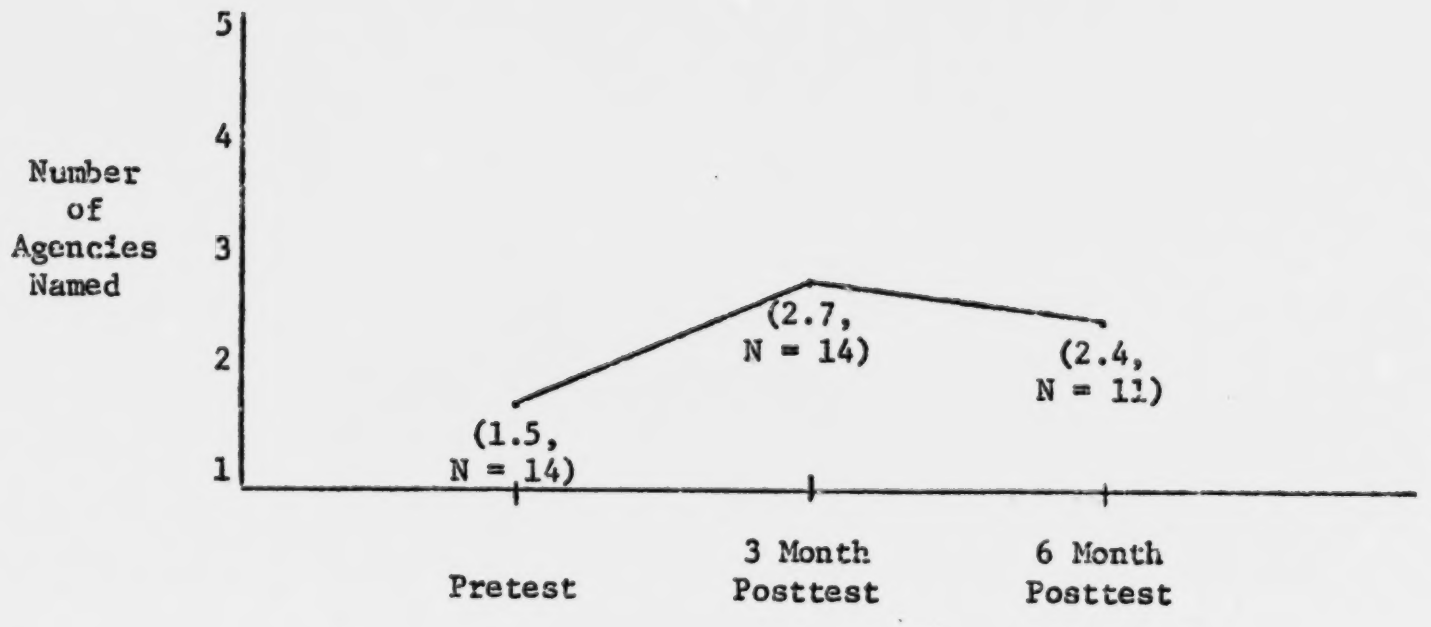

FIGURE 3

MOTHERS' KNOWLEDGE OF COMMUNITY AGENCIES

To determine if the length of the mother's employment as a center aide was related to the mother's experience at the centers, the duration of the mother's employment during the study period was correlated with changes in test performance on the DDST and STIM. The Spearman rank difference correlation coefficient between the number of months the mother worked at the center and the child's improvement from the first to the third administration of the DDST was .11. That obtained between the number of months the mother worked at the center and the improvement from the first to the third administration of the STIM was -.12. Neither of these figures is statistically significant, nor do they suggest any relationship between the length of the mother's employment and the improvements which occurred on the tests.

Only two of the children who were available for both posttests had irregular attendance at the center. Thus, it was not possible to analyze the relationship between the child's attendance and his gains in development.

A chi-square analysis was conducted to determine whether being above or below the mean score at initial testing was related to being above or below the mean score on change from the initial to the six-month posttest. There was a significant relationship for DDST scores ($X^2 = 5.33$, $dt = 1$, $p < .05$) and a nearly significant relationship for STIM scores ($X^2 = 3.6$, $d = 1$, $p < .10$). In both instances a score below the mean for the pretest was associated with an above the mean increase in score by the six-month posttest, and the reverse held true for scores that were initially above the mean.

DISCUSSION

The present evaluation has yielded results similar to other studies of "intervention" in the development of pre-school children from underprivileged backgrounds. The changes in DDST scores indicate that significant benefits to

the children have resulted from the parent and child center program. In the absence of a control group it is not possible to say to what extent these benefits exceed changes that could have occurred in similar children not involved in such a program. However, since the DDST is based on age norms it is reasonable to conclude that the improvement shown by the center children over the six month period reflects the effects of the center program rather than changes which occur with increasing age.

In previous investigations that have incorporated several years of follow-up testing it has often been found that changes such as those shown by these children do not last in the absence of further intervention. It has been found that control group children "catch up" with experimental group children once both groups are involved in the public schools. There is one reason why that might not prove true in the present case even if these children were not involved in further programs. That is, that the STIM results indicate that significant changes have occurred in the amount and quality of developmental stimulation provided for these children in the home. Since these score changes probably reflect modification of some parental habits, there is a basis for expecting that this improvement in the child's environment may outlast his involvement in the program.

The direct involvement of the mothers in this program is fairly unique. It is surprising that no correlation could be demonstrated between the length of the mother's employment at the centers and the degree of change in the STIM scores for her home. It may be that the main effect on the mother occurs during the first few weeks of contact with the center and that additional months of employment have little effect. It would be during those first few weeks that she would be exposed to the most intense instruction in the goals and techniques of the center with regard to stimulating the children.

The finding that the greatest changes in DDST or STIM scores occurred in children or mothers that entered with the lowest initial scores is not surprising. It indicates benefit from the centers' programs was greatest when the initial deprivation was worst.

Conclusions drawn from subtest scores must be highly tentative in view of the diminished reliability which is usually found in subtest scores as compared to a full test and additionally in this study because of the small size of the sample. Keeping these limitations in mind, some inferences can be drawn.

Among the four subtests of the DDST it was clearly the language area that showed the greatest change. The average performance changed from passing 29.1% of the age-appropriate items at initial testing to 82.7% six months later. This seems to be consistent with and to justify the emphasis on language development at the centers. The personal-social subtest was the second-worst area initially. Although some improvement occurred by the time of the six month posttest, the children still averaged only 70.2% of the age appropriate items passed. Small improvements in scores occurred in the gross-motor and fine-motor subtests, but the initial scores suggest that the children were least deficient in those areas.

Consistent with the results on the DDST, the subtest which showed the greatest change in the STIM was that of 'developmental and vocal stimulation." There was a 71% improvement in scores over the six-month period between pretest and posttest. Most of the change appeared to occur in the first three months. "Available play materials," "frequency and stability of adult contact," "emotional climate," and "aspects of the physical environment" were also subtests that showed score improvements of from 57 to 33%.

The "breadth of experience" subtest showed no change over the six months and the "avoidance of restriction" subtest showed a drop in score of 18%. This and the fact that the scores obtained by the families on these subtests is less

than half the maximum possible score for those subtests of the STIM suggests that these are areas where much improvement in the developmental stimulation provided by these families would be possible. Perhaps the same holds true for "available play materials" where a 57% improvement in score still left the score at less than half of the maximum possible score for that subtest. (An added reservation here, of course, is that maximum possible scores may not be related to norms.)

The present evaluation is fairly unique in several respects. It is one of few evaluations of developmental intervention programs involving children in the first three years of life. Particularly, few such programs have involved a primarily Chicano population. It is also unique in attempting to influence the mother's handling of the child by hiring her into the program. Within the several limitations of this study it appears that the program was of substantial benefit in the areas of greatest deficiency in the development of these children and in the child related behaviors of their mothers.

APPENDIX A

SUBTEST SCORES ON THE DENVER DEVELOPMENTAL SCREENING TEST

Subtest	I Pretest N = 15	II Three Month Posttest N = 15	III Six Month Posttest N = 12	% Change $\frac{\text{I - III}}{\text{I}}$
Gross-Motor	71.7%	85.7	80.4	12%
Fine-Motor	73.2%	76.8	78.2	7%
Language	29.1%	52.5	82.7	184%
Personal-Social	57.9%	70.4	70.2	21%

APPENDIX B

SUBTEST SCORES ON THE HOME STIMULATION INVENTORY

Subtest	I Pretest N = 16	II Three Month Posttest N = 16	III Six Month Posttest N = 10	% Change $\frac{\text{I - III}}{\text{I}}$
Frequency and Stability of Adult Contact	4.4	5.3	6.3	43%
Developmental and Vocal Stimulation	7.9	12.0	13.5	71%
Emotional Climate	4.6	7.3	6.2	35%
Avoidance of Restriction	2.2	2.8	1.8	-18%
Breadth of Experience	5.6	6.6	5.6	0%
Aspects of the Physical Environment	4.8	6.6	6.4	33%
Available Play Materials	3.0	4.7	4.7	57%